UDC 517

VARIABLE LEBESGUE SPACES AND APPROXIMATION

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A Jackson type inequality of trigonometric approximation and its refinement are obtained for the modulus of smoothness of fractional order in variable exponent Lebesgue spaces $L^{p(x)}$ with $1 < essinf_{x\in[0,2\pi]} p(x)$, $esssup_{x\in[0,2\pi]} p(x) < \infty$.

Keywords: approximation, Lebesgue spaces.

References

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UDC 517.53

HERMITE-PADÉ APPROXIMANTS FOR A PAIR OF CAUCHY TRANSFORMS WITH INTERLACING SUPPORTS

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Hermite-Padé approximants of type II are vectors of rational functions with common denominator that interpolate a given vector of power series at infinity with maximal order. We are interested in the situation when the approximated vector is given by a pair of Cauchy transforms of smooth complex measures supported on the real line. The convergence properties of the approximants are rather well understood when the supports consist of two disjoint intervals (Angelesco systems) or two intervals that coincide under the condition that the ratio of the measures is a restriction of the Cauchy transform of a third measure (Nikishin systems). In this talk we consider the case where the supports form two interlacing symmetric intervals and the ratio of the measures extends to a holomorphic function in a region that depends on the size of interlacing. This problem was posed and studied by Herbert Stahl at 80-ties, however the detailed proof for the asymptotics of Hermite-Padé approximants has never been published. We shall speak about algebraic functions (of genus 1 and 2) and their abelian integrals (with purely imaginary periods) which defines the main term of asymptotics for this problem.

Keywords: Hermite-Padé approximation, simultaneous interpolation with free poles, non-Hermitian orthogonality, multiple orthogonal polynomials, strong asymptotics.

The talk is based on the joint work [1].